

Durham Research Online

Deposited in DRO:

27 January 2012

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Woods, A. (2012) 'Mathematics, masculinity, madness.', in Madness in context : historical, poetic and artistic narratives. Oxford: Interdisciplinary Press.

Further information on publisher's website:

<http://www.interdisciplinarypress.net/online-store/ebooks/medical-humanities/madness-in-context>

Publisher's copyright statement:

Additional information:

Interdisciplinary Research provide free access to the full-text if you register with them. See their website for further details <https://www.interdisciplinarypress.net/online-store/ebooks/medical-humanities/madness-in-context>

Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a [link](#) is made to the metadata record in DRO
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full DRO policy](#) for further details.

Mathematics \diamond Masculinity \diamond Madness

Angela Woods

Abstract

According to phenomenological psychologist Louis Sass, conventional psychiatric, psychoanalytic and avant-garde accounts of schizophrenia “share the assumption that schizophrenic pathology must involve a loss of what, in the West, has long been assumed to be the most essential characteristics of mind or subjectivity: the capacities for logic and abstract thinking, for self-reflection, and for the exercise of free will.” Against these models, Sass advances an original account of schizophrenia as exigent introspection, a compulsive hyper-reflexivity that is “an alienation not from reason but from the emotions, instincts and the body.” On this view, rationality itself becomes the site of madness.

This paper uses Sass’s account of schizophrenia to critically interrogate one of cinema’s enduring tropes – the figure of the mad mathematician. Looking beyond clichéd images of the endearing eccentric, I offer a close reading of two films where mathematical genius is associated with a psychic disturbance that is anything but benign.

Despite significant aesthetic and political differences, the portraits of schizophrenia presented in Darren Aronofsky’s *Pi* and Ron Howard’s *A Beautiful Mind* at first glance appear to be the apotheosis of Sass’s model. In both films, a crisis in knowing precipitates a crisis of being; schizophrenia is coextensive with a breakdown in the coherence of mathematical language. It is, however, the affective male body that registers and responds to this breakdown. To what extent, then, do *Pi* and *A Beautiful Mind* consolidate or unsettle Western culture’s association of rationality, masculinity, logic and the mind, as distinct from a madness located in the body, passion and the feminine? Analysing the way in which gender figures in these films’ portrayals of schizophrenia and mathematical genius, we can see the limitations, but also the future possibilities, of Sass’s account of a quintessentially modern madness.

Key Words: Schizophrenia, Louis A Sass, mathematics, masculinity, rationality, creativity, *Pi*, *A Beautiful Mind*.

1. Schizophrenia, gender and rationality

In his book *Madness and Modernism*, psychologist Louis Sass challenges three dominant paradigms of schizophrenia which present the quintessential form of modern madness as a deficiency or lack.¹ His first challenge is to psychiatry which in his view has, even since Kraepelin's earliest descriptions of dementia praecox advanced a "doctrine of the broken brain." Second, he takes to task the regressive hypothesis of psychoanalysis which constructs schizophrenia as the regression to an earlier stage of psychosexual development, or as a weakening of the ego. Finally, Sass questions the so-called avant-garde view of madness as an absence of social and psychic repression; the revelation of the workings of the unconscious or as a Dionysian expression of vitality.

Against these paradigms, Sass advances his own original take on schizophrenia through this central question:

What if madness, in at least some of its forms, were to derive from a heightening rather than a dimming of conscious awareness, and an alienation not from reason but from the emotions, instincts and the body?²

For Sass, the schizophrenic dissolution of self is not the result of the deterioration of the brain, mind or ego; rather it is caused by an unabating and acute self-awareness – a hyper-reflexivity. Schizophrenic experience, he argues, "may be characterised ...by separation, restraint, and an exaggerated cerebralism and propensity for introspection."³ Charting the relationship between schizophrenia and modern art, literature and thought, Sass is careful not to posit a causal connection between madness and modernism, but instead aims to identify parallels and points of convergence. My paper today proceeds in that spirit.

Before we move on, however, I would like briefly to discuss two highly suggestive aspects of Sass's account of schizophrenia which remain relatively unexplored in his work. The first is that despite the fact that the overwhelming majority of artists, philosophers, writers and sufferers of schizophrenia he discusses are men, Sass does not pause to examine the role of gender in the expression, articulation or realisation of this form of madness. In the prologue to his book Sass argues that in the history of madness "Nearly always insanity involves a shift from human to animal, from culture to nature, from thought to emotion, from maturity to the infantile and the archaic."⁴ Has insanity also involved a shift from "masculine" to "feminine"? And if so, how does Sass's model reverse this trend? In her hugely influential book *The Female Malady*, Elaine Showalter argues that traditionally women have been situated

on the side of irrationality, silence, nature, and body, while men are situated on the side of reason, discourse, culture, and mind. [...] Thus, madness, even when experienced by men, is metaphorically and symbolically represented as feminine.⁵

Does Sass's claim that schizophrenia is "an alienation not from reason but from the emotions, instincts and the body," actually point to a recoding of schizophrenia as "masculine"?

In addition to his study of modernism, Sass has done extensive research into creativity and psychopathology aimed at countering the deficit models of schizophrenia and correcting the view that depression and affective disorders are somehow more closely linked to creativity.⁶ However, like most theorists in this area, Sass focuses almost exclusively on the arts and humanities rather than the physical and natural sciences. Setting to one side the ongoing debate about the merits of distinguishing forms of creativity,⁷ it seems clear that rationality can be performed and perceived very differently in the contexts of artistic and scientific endeavour.⁸ While comparatively little research has been done in the area of schizophrenia and scientific creativity, there are a number of interesting studies linking schizophrenic psychopathology to above-average mathematical intelligence in boys,⁹ and demonstrating a link between schizophrenia and scientific genius.¹⁰ Might Sass's model of schizophrenia as something like an excess of rationality go some way towards explaining why?

2. **Introducing *Pi* and *A Beautiful Mind***

My aim in this paper, then, is to extend Sass's inquiry into the correlation between madness and modernism by looking at the figure of the mad mathematician in two contemporary American films – *Pi* and *A Beautiful Mind*.¹¹ Over the last ten years, mathematics and mathematicians have become increasingly and perhaps surprisingly popular subjects in cinema.¹² This paper can also be read as contributing to a broader discussion about what a fascination with the mathematical might reveal about contemporary culture.

Pi is a critically acclaimed independent film by Darren Aronofsky made on a shoestring budget of \$60,000. Ron Howard's *A Beautiful Mind*, by contrast, is a multi-academy-award winning blockbuster made for an estimated \$60,000,000.

Pi tells the story of a lonely New York mathematician whose obsession with finding the code to the stockmarket leads him to the discovery of a 216 digit number that may or may not be the key to deeper mysteries. The elusive number in turn leads severe physical pain, to persecution by a Jewish sect and a Wall Street firm, and eventually to his psychic breakdown. *A Beautiful Mind* is loosely based on the life of John Nash, a Nobel-prize-

winning mathematician who suffered from schizophrenia for over thirty years. Beginning with his student days at Princeton, the film follows his marriage, psychic breakdown, hospitalisation and slow and gradual recovery. A series of delusional characters – a College roommate, a young girl, and a shadowy Government agent – drive considerable parts of the highly fictionalised narrative. The fact that these films are poles apart artistically and stylistically makes their thematic and visual convergences all the more striking. The previews capture something of the flavour of each film.¹³

Scholarly and popular responses to these films have raised a number of issues of interest to our project here. While *Pi* has not received the attention it perhaps deserves, debate nonetheless has focussed on whether this psychological thriller is – structurally as well as thematically – a film about mathematics, or a film about paranoia.¹⁴ The fact that the film goes for precisely 1 hour 23 minutes and 45 seconds is, it is suggested, one of many indicators that the filmmakers take their numbers seriously.

A Beautiful Mind, by contrast, is structurally reliant about the conventions of the classical Hollywood narrative but in its ambition for verisimilitude has stimulated a much broader set of debates. The most obvious of these is the film's fidelity to the award-winning biography of John Nash.¹⁵ Nash's homosexual encounters, his divorce and his more bizarre delusions are omitted from the film and its relationship to his actual experience is questionable. Arguments have also erupted about the portrayal of mathematics – while some accuse the film of oversimplification, others, including Nash himself, have praised *A Beautiful Mind* for its accuracy and making complex theory accessible and even entertaining.¹⁶ More salient, perhaps, to our inquiry, is the film's depiction of schizophrenia, which has been another major source of controversy.¹⁷ Applauded by advocacy, patient and professional groups, and even used as an educational tool – it's also been said to offer a distorted and falsely optimistic portrait of this disorder.¹⁸ And finally, there have been questions raised about whether the film is actually better interpreted as a drama about masculinity and the redemptive powers of romantic love than either mathematics or madness.¹⁹

My view is that the most productive way to read these films is as posing a problem at the *intersection* of schizophrenia, masculinity, and mathematics.

3. **Madness and the mathematical mind**

In her article "A beautiful myth? The gendering of being/doing 'good at maths,'" Heather Mendick argues that Western popular and educational discourses "socially construct 'mathematical ability' as natural, individual and masculine."²⁰ I want to argue that each of these films presents a crisis in mathematical ability. This is registered as a movement from

healthy to pathological in the subject, object and method of mathematical knowing.

So who, in these films, is the subject of knowledge – the one who knows? The answer is relatively straightforward – within the first few minutes both films establish their protagonists as geniuses; men who know themselves to be exceptional thinkers. As their psychosis takes hold, however, narcissism descends into paranoia, and genius takes on a messianic, almost superhuman quality. They are the chosen ones, tasked with a special world-saving mission.

What is it, then, that is the object of the genius' knowledge? In *A Beautiful Mind*, as we saw, the initial object of knowledge is not in fact mathematically specific or substantive but rather symbolic – it is, simply, the “truly original idea.” This is fairly quickly accomplished with the submission of the prize-winning doctoral thesis, after which point the object of knowledge changes. As paranoia takes hold, it is no longer the discovery of something unknown that obsesses Nash, but the identification of existing patterns. In his delusional state, Nash is working secretly for the US Government to crack the communist code, finding clues to atomic secrets encoded in newspapers and magazines.

Pi has perhaps a more prosaic starting point – simply, the code to the stock market. Max's interest is driven by the mathematical complexity and apparent chaos of the stock market rather than a desire for financial gain. However, the object under investigation soon takes on a deeper significance as the answer to pi, to the Kabala, to God – as the secret to life itself.

Worth noting in both films is that the paranoid or pathological object of knowledge – the master code – is so dangerous that it results in the (real or imagined) persecution of the genius who would dare to discover it.

Finally, what is the mode or method that links the subject and object of knowledge? In essence: mathematical insight and success is presented as antithetical to and even conditional upon the renunciation of intimacy, sociality, nourishment, connectedness and safety. It is or at least should be the product of an exclusively cerebral moment – anti-corporeal, anti-instinctual and anti-emotional, as the *A Beautiful Mind*'s first code-breaking scene amply demonstrates. What is interesting about this scene is its enchantment with a presentation of genius as a moment of visual epiphany, and that it shows a rational or scientific process being applied to a false or delusional object.²¹ In both films scientific rigour gives way to a kind of mystical or religious methodology that transforms the world of numbers into ‘mere’ numerology.

It is crucial to note that the crisis dramatised in these films comes not through the protagonists' rejection of mathematical practices and processes, but rather through their intensification, acceleration or hyper-

extension. In fact, both films offer no other explanation for the descent into madness than mathematics itself...as if it was already pathological.

How, then, is this pathology resolved?

4. **Madness and the mathematician's body**

I want to suggest today that the body is a key site in these films for the expression of madness and for its eventual resolution.

Much has been made of the casting of a "Hollywood hunk" in *A Beautiful Mind* – fresh from *Gladiator*, Russell Crowe's body is pivotal to the film, marking a passage from youthful vitality through illness to healthy old age. Rather than being a source or locus of illness, Nash's body in the film is instead a site of cure. This is not because it is subjected insulin coma therapy and takes psychotropic drugs (these are, in fact, ultimately ineffectual). Rather, it the affective heterosexual body – the body as a site of romantic love and physical intimacy – that is central to his recovery. The good heart can prevail over the sick mind.

Pi's engagement with the corporeal realm is arguably more interesting and certainly more complex. Whereas in *A Beautiful Mind* illness is externalised and projected outwards on the hallucinated bodies of Charles, Marcie and William Parcher – in *Pi* it is Max's body which becomes the site of breakdown. In the opening scene of *Pi*, Max recounts being blinded at the age of six by staring into the sun. This was a moment of pure pain and pure insight. Visually the film suggests a link between this blinding experience and the pain in Max's head – headaches so severe they cause him to blackout. Later, he starts to see visions of a pulsing, bleeding brain on the subway and in his apartment. Despite being cautioned by his neighbour and his mentor to eat, rest and sleep, Max persists in pushing at his corporeal limits, with disastrous results. At the point of discovering the 216 digit number, Euclid – Max's computer and symbolically the externalisation of his mind – breaks down and is found to be literally infected with insects. Similarly, Max's mentor Sol dies from a heart attack brought on by the resumption of his mathematical investigations.

The body's transition from the site of pathology to the site of cure is realised in the climactic penultimate scene of *Pi*, where Max takes a drill to his head to stop the pain. Is this a hallucination, exorcism, suicide or desperate act of home surgery? *Pi* answers this question in the final park scene, where Max is relaxed and even relieved but can no longer perform superhuman feats of calculation. He is no longer genius, and hence, no longer mad.

John Nash and Max Cohen are ultimately redeemed through their bodies – through recognising the body's limits, but also its potential for social connection with others. In her book *The mastery of reason*, Valerie Walkerdine analyses the gendering of rationality as masculine within

Western discourse, and argues that this produces “The Other of mathematics [as] uncertainty, irrationality, out of control, madness and so on.”²² These films’ fictional portrayal of two mathematical geniuses, I suggest, disrupt those binary oppositions.

Pi and *A Beautiful Mind* bring to life Sass’s model of schizophrenia as an excess of rationality and an alienation from the emotions and the body, showing its links to a certain articulation of masculinity and of scientific creativity. The extent to which this points towards broader cultural trends is a question ripe for further discussion through Sass’s suggestion that “the psychotic person may at times live out, in exaggerated, almost literal fashion, the ontological and epistemological assumptions of his or her age.”²³

Notes

¹ Louis a Sass, *Madness and Modernism: Insanity in the Light of Modern Art, Literature and Thought* (Cambridge, Massachusetts: Harvard University Press, 1992).

² Ibid., p. 4.

³ Ibid., p. 10.

⁴ Ibid., p. 4.

⁵ Elaine Showalter, *The Female Malady: Women, Madness and English Culture 1830 - 1980* (London: Virago, 1987), p. 3 - 4.

⁶ Louis a Sass, 'Schizophrenia, Modernism, and the "Creative Imagination": On Creativity and Psychopathology', *Creativity Research Journal*, 13/1 (2001), 55 - 74.

⁷ See Ennio De Giorgi, 'Interview with Ennio De Giorgi by Michele Emmer', in Michele Emmer and Mirella Manaresi (eds.), *Mathematics, Art, Technology and Cinema* (Berlin: Springer, 2003), p. 223.

⁸ George Becker, 'The Association of Creativity and Psychopathology: Its Cultural-Historical Origins', *Creativity Research Journal*, 13/1 (2001), p. 52.

⁹ Jon L Karlsson, 'Psychosis and Academic Performance', *British Journal of Psychiatry*, 184 (2004), 327 - 29.

¹⁰ Young-Gun Ko and Jin-Young Kim, 'Scientific Geniuses' Psychopathology as a Moderator in the Relation between Creative Contribution Types and Eminence', *Creativity Research Journal*, 20/3 (2008), 251 - 61.

¹¹ *Pi* (Artisan Studies, 1998), Darren Aronofsky (dir.), *A Beautiful Mind* (Universal Pictures, 2001), Ron Howard (dir.).

¹² See Michele Emmer, 'Mathematics and Cinema', in Michele Emmer and Mirella Manaresi (eds.), *Mathematics, Art, Technology and Cinema* (Berlin: Springer, 2003), 109 - 37, and others in that collection. See also Heather

Mendick, 'A Mathematician Goes to the Movies', *Proceedings of the British Society for Research into Learning Mathematics*, 24/1 (2004), 43 – 48.

¹³ Previews can be downloaded from each movie's official web site and were played during the presentation.

¹⁴ Graham Fermelo, 'Science in Culture (Review of Π)', *Nature*, 397/11 (1999), 490. Perhaps the most interesting readings of this film are as an illustration of the Lacanian account of psychosis Paul Eisenstein, 'Visions and Numbers: Aronofsky's Π and the Primordial Signifier', in Todd McGowan and Sheila Kunkle (eds.), *Lacan and Contemporary Film* (New York: Other Press, 2004), 1 - 29., and as a film which is compositionally faithful to a mathematical order Elizabeth Klaver, 'Proof, Π , and Happy Days: The Performance of Mathematics', *The Journal of the Midwest Modern Language Association*, 38/1 (2005), 5-22.

¹⁵ Sylvia Nasar, *A Beautiful Mind* (New York: Simon & Schuster, 1998).

¹⁶ Dana Mackenzie, 'Beautiful Mind's Math Guru Makes Truth = Beauty', *Science*, 295/5556 (2002), 789 - 91.

¹⁷ While some see Nash's madness as a "classic" case of schizophrenia, for example, James M Glass, 'A Beautiful Mind', *The Journal of Nervous and Mental Disease* 187/12 (1999), p. 770., others, such as Max Fink, suggest he was misdiagnosed: Max Fink, 'A Beautiful Mind and Insulin Coma: Social Constraints on Psychiatric Diagnosis and Treatment', *Harvard Review of Psychiatry*, 11/5 (2003), p. 286.

¹⁸ Jason Rosenstock, 'Beyond a Beautiful Mind: Film Choices for Teaching Schizophrenia', *Academic Psychiatry*, 27/2 (2003), p. 117-18. The most detailed psychoanalytic reading of Nash's schizophrenia is offered by Donald Capps: 'John Nash's Predelusional Phase: A Case of Acute Identity Confusion', *Pastoral Psychology*, 51/5 (2003), 361 – 83; 'John Nash's Delusional Decade: A Case of Paranoid Schizophrenia', *Pastoral Psychology*, 52/3 (2004a), 193 - 218; 'John Nash's Postdelusional Period: A Case of Transformed Narcissism', *Pastoral Psychology*, 52/4 (2004b), 289 – 313.

¹⁹ Sam Khorrami, 'Genius, Madness, and Masculinity: A Beautiful Mind Examined through a Men's Issue Model', *Men and Masculinities*, 5/1 (2002), 116 – 18.

²⁰ Heather Mendick, 'A Beautiful Myth? The Gendering of Being/Doing 'Good at Maths'', *Gender and Education*, 17/2 (2005), p. 204.

²¹ Marilyn Charles, 'A Beautiful Mind', *The American Journal of Psychoanalysis*, 63/1 (2003), p. 21-22.

²² Valerie Walkerdine, *The Mastery of Reason: Cognitive Development and the Production of Rationality* (London: Routledge, 1988), p. 199.

²³ Louis a Sass, 'The Consciousness Machine: Self and Subjectivity in Schizophrenia and Modern Culture', in Ulric Neisser and David a Jopling

(eds.), *The Conceptual Self in Context: Culture, Experience, Self-Understanding* (Cambridge: Cambridge University Press, 1997), p. 222.

Bibliography

- Aronofsky, Darren (dir.) *Pi* (Artisan Studies, 1998).
- Becker, George (2001), 'The Association of Creativity and Psychopathology: Its Cultural-Historical Origins', *Creativity Research Journal*, 13 (1), 45 – 53.
- Capps, Donald (2003), 'John Nash's Predelusional Phase: A Case of Acute Identity Confusion', *Pastoral Psychology*, 51 (5), 361 – 83.
- (2004a), 'John Nash's Delusional Decade: A Case of Paranoid Schizophrenia', *Pastoral Psychology*, 52 (3), 193 - 218.
- (2004b), 'John Nash's Postdelusional Period: A Case of Transformed Narcissism', *Pastoral Psychology*, 52 (4), 289 – 313.
- Charles, Marilyn (2003), 'A Beautiful Mind', *The American Journal of Psychoanalysis*, 63 (1), 21 – 37.
- De Giorgi, Ennio (2003), 'Interview with Ennio De Giorgi by Michele Emmer', in Michele Emmer and Mirella Manaresi (eds.), *Mathematics, Art, Technology and Cinema* (Berlin: Springer), 220 – 31.
- Eisenstein, Paul (2004), 'Visions and Numbers: Aronofsky's π and the Primordial Signifier', in Todd McGowan and Sheila Kunkle (eds.), *Lacan and Contemporary Film* (New York: Other Press), 1 - 29.
- Emmer, Michele (2003), 'Mathematics and Cinema', in Michele Emmer and Mirella Manaresi (eds.), *Mathematics, Art, Technology and Cinema* (Berlin: Springer), 109 - 37.
- Fermelo, Graham (1999), 'Science in Culture (review of π)', *Nature*, 397 (11), 490.
- Fink, Max (2003), 'A Beautiful Mind and Insulin Coma: Social Constraints on Psychiatric Diagnosis and Treatment', *Harvard Review of Psychiatry*, 11 (5), 284–90.
- Glass, James M (1999), 'A Beautiful Mind', *The Journal of Nervous and Mental Disease* 187 (12), 769-71.
- Howard, Ron (dir.) *A Beautiful Mind* (Universal Pictures, 2001).
- Karlsson, Jon L (2004), 'Psychosis and academic performance', *British Journal of Psychiatry*, 184, 327 – 29.
- Khorrami, Sam (2002), 'Genius, Madness, and Masculinity: A Beautiful Mind Examined Through a Men's Issue Model', *Men and Masculinities*, 5 (1), 116 – 18.

-
- Klaver, Elizabeth (2005), 'Proof, π , and Happy Days: The Performance of Mathematics', *The Journal of the Midwest Modern Language Association*, 38 (1), 5-22.
- Ko, Young-gun and Kim, Jin-young (2008), 'Scientific Geniuses' Psychopathology as a Moderator in the Relation Between Creative Contribution Types and Eminence', *Creativity Research Journal*, 20 (3), 251 - 61.
- Mackenzie, Dana (2002), 'Beautiful Mind's Math Guru Makes Truth = Beauty', *Science*, 295 (5556), 789 - 91.
- Mendick, Heather (2004), 'A Mathematician Goes to the Movies', *Proceedings of the British Society for Research into Learning Mathematics*, 24 (1), 43 - 48.
- (2005), 'A beautiful myth? The gendering of being/doing 'good at maths'', *Gender and Education*, 17 (2), 203-19.
- Nasar, Sylvia (1998), *A Beautiful Mind* (New York: Simon & Schuster).
- Rosenstock, Jason (2003), 'Beyond A Beautiful Mind: Film Choices for Teaching Schizophrenia', *Academic Psychiatry*, 27 (2), 117 - 22.
- Sass, Louis A (1992), *Madness and Modernism: Insanity in the Light of Modern Art, Literature and Thought* (Cambridge, Massachusetts: Harvard University Press).
- (1997), 'The Consciousness Machine: Self and Subjectivity in Schizophrenia and Modern Culture', in Ulric Neisser and David A Jopling (eds.), *The Conceptual Self in Context: Culture, Experience, Self-understanding* (Cambridge: Cambridge University Press).
- (2001), 'Schizophrenia, Modernism, and the "Creative Imagination": On Creativity and Psychopathology', *Creativity Research Journal*, 13 (1), 55 - 74.
- Showalter, Elaine (1987), *The Female Malady: Women, Madness and English Culture 1830 - 1980* (London: Virago).
- Walkerdine, Valerie (1988), *The mastery of reason: cognitive development and the production of rationality* (London: Routledge).

Angela Woods is an honorary fellow of the School of Culture and Communication at the University of Melbourne. Her book *The Sublime Object of Psychiatry: Schizophrenia in Clinical and Cultural Theory* is forthcoming with Oxford University Press in 2010.